

**Listing of Claims:**

1-16 (canceled).

17. (Currently amended) A pharmaceutical composition which comprises:

- (i) a first compound in an effective amount of for treating alopecia or promoting hair growth, wherein said first compound is a nitrogen-containing heterocyclic compound having two or more heteroatoms,

wherein said first compound has a substituent  $-C(W)-C(Y)-$  which is attached to a nitrogen atom of the heterocyclic ring,

wherein W and Y are independently selected

from the group consisting of O, S,  $CH_2$ , and  $H_2$ , and

wherein said first compound is additionally substituted ~~with a~~ with an ester or amide substituent attached to any atom of the heterocyclic ring other than said nitrogen atom,

provided that said ester or amide substituent is not an N-oxide of an ester or amide and further provided that said amide substituent is linked to the heterocyclic ring with a carbon-carbon bond;

(ii) a second compound for treating alopecia or promoting hair growth;  
and

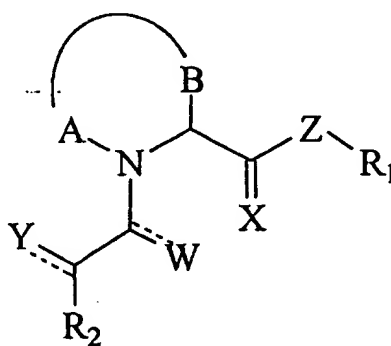
(iii) a pharmaceutically acceptable carrier.

18. (Currently amended) The pharmaceutical composition of claim 17, wherein the first compound is non-immunosuppressive.

19. (Currently amended) The pharmaceutical composition of claim 17, wherein the first compound has an affinity for an FKBP-type immunophilin.

20. (Original) The pharmaceutical composition of claim 19, wherein the FKBP-type immunophilin is FKBP-12.

21. (Currently amended) The pharmaceutical composition of claim 17, wherein the first compound is of formula I



or a pharmaceutically acceptable salt, ester, or solvate thereof, wherein:

A and B, together with the nitrogen and carbon atoms to which they are respectively attached, form a 5-7 membered saturated or unsaturated heterocyclic ring containing, in addition to the nitrogen atom, one or more additional O, S, SO, SO<sub>2</sub>, N, NH, or NR<sub>1</sub> heteroatom;

X is O or S;

Z is O, NH, or NR<sub>1</sub>;

W and Y are independently O, S, CH<sub>2</sub>, or H<sub>2</sub>;

R<sub>1</sub> is C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or C<sub>2</sub>-C<sub>6</sub> straight or branched chain alkenyl, which is substituted with one or more substituent(s) independently selected from the group consisting of (Ar<sub>1</sub>)<sub>n</sub>, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or C<sub>2</sub>-C<sub>6</sub> straight or branched chain alkenyl substituted with (Ar<sub>1</sub>)<sub>n</sub>, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or C<sub>2</sub>-C<sub>6</sub> straight or branched chain alkenyl substituted with C<sub>3</sub>-C<sub>8</sub> cycloalkyl, and Ar<sub>2</sub>;

n is 1 or 2;

R<sub>2</sub> is either C<sub>1</sub>-C<sub>9</sub> straight or branched chain alkyl, C<sub>2</sub>-C<sub>9</sub> straight or branched chain alkenyl, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, C<sub>5</sub>-C<sub>7</sub> cycloalkenyl or Ar<sub>1</sub>,

wherein said alkyl, alkenyl, cycloalkyl or cycloalkenyl is either unsubstituted or substituted with one or more substituent(s) independently selected from the group consisting of C<sub>1</sub>-C<sub>4</sub> straight or branched chain alkyl, C<sub>2</sub>-C<sub>4</sub> straight or branched chain alkenyl, and hydroxy; and

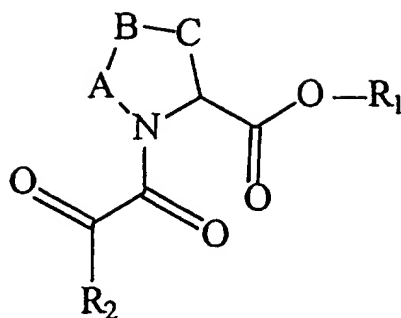
Ar<sub>1</sub> and Ar<sub>2</sub> are independently an alicyclic or aromatic, mono-, bi- or tricyclic, carbo- or heterocyclic ring,

wherein the ring is either unsubstituted or substituted with one or more substituent(s) independently selected from the group consisting of halo, hydroxy, nitro, trifluoromethyl, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl, C<sub>2</sub>-C<sub>6</sub> straight or branched chain alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>2</sub>-C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, and amino, wherein the individual ring size is 5-6 members, and wherein the heterocyclic ring has 1-6 heteroatom(s) independently selected from the group consisting of O, N, and S.

22. (Previously presented) The pharmaceutical composition of claim 21, wherein said Ar<sub>1</sub> or Ar<sub>2</sub> is selected from the group consisting of naphthyl, indolyl, furyl, thiazolyl, thienyl, pyridyl, quinolinyl, isoquinolinyl, fluorenyl, and phenyl.

23. (Original) The pharmaceutical composition of claim 21, wherein the one or more additional heteroatom(s) in the 5-7 membered saturated or unsaturated heterocyclic ring is NH or NR<sub>1</sub>.

24. (Currently amended) The pharmaceutical composition of claim 17, wherein the first compound is of formula II



II

or a pharmaceutically acceptable salt, ester, or solvate thereof, wherein:

A, B and C are independently CH<sub>2</sub>, O, S, SO, SO<sub>2</sub>, NH, or NR<sub>1</sub>, provided that A, B and C are not all CH<sub>2</sub>;

R<sub>1</sub> is C<sub>1</sub>-C<sub>5</sub> straight or branched chain alkyl or C<sub>2</sub>-C<sub>5</sub> straight or branched chain alkenyl, which is substituted with one or more substituent(s) independently selected from the group consisting of (Ar<sub>1</sub>)<sub>n</sub> and C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or C<sub>2</sub>-C<sub>6</sub> straight or branched chain alkenyl substituted with (Ar<sub>1</sub>)<sub>n</sub>;

n is 1 or 2;

R<sub>2</sub> is either C<sub>1</sub>-C<sub>9</sub> straight or branched chain alkyl, C<sub>2</sub>-C<sub>9</sub> straight or branched chain alkenyl, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, C<sub>5</sub>-C<sub>7</sub> cycloalkenyl, or Ar<sub>1</sub>; and

Ar<sub>1</sub> is ~~a~~ is an alicyclic or aromatic, mono-, bi- or tricyclic, carbo- or heterocyclic ring,

wherein the ring is either unsubstituted or substituted with one or more substituent(s) independently selected from the group consisting of halo, hydroxy, nitro, trifluoromethyl, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl, C<sub>2</sub>-C<sub>6</sub> straight or branched chain alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>2</sub>-C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, and amino, wherein the individual ring size is 5-6 members, and wherein the heterocyclic ring has 1-6 heteroatom(s) independently selected from the group consisting of O, N, and S.

25. (Original) The pharmaceutical composition of claim 24, wherein:

A is CH<sub>2</sub>;

B is CH<sub>2</sub> or S;

C is CH<sub>2</sub> or NH;

R<sub>1</sub> is selected from the group consisting of 3-phenylpropyl and 3- (3-pyridyl) propyl; and

R<sub>2</sub> is selected from the group consisting of 1, 1-dimethylpropyl, cyclohexyl, and *tert*-butyl.

26. (Original) The pharmaceutical composition of claim 25, wherein:

B is CH<sub>2</sub>;

C is NH; and

R<sub>1</sub> is 3-phenylpropyl.

27. (Original) The pharmaceutical composition of claim 25, wherein:

B is S; and

C is CH<sub>2</sub>.

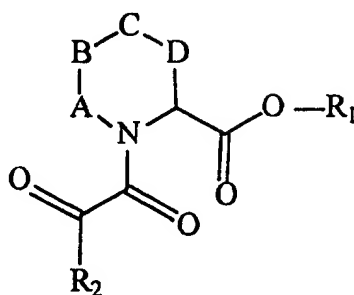
28. (Currently amended) The pharmaceutical composition of claim 24, wherein the first compound is selected from the group consisting of:

3-phenyl-1-propyl (2S) -1- (3,3-dimethyl-1,2-dioxopentyl)-2-(4-thiazolidine) carboxylate; and

3-(3-pyridyl)-1-propyl (2S)-1-(3,3-dimethyl-1,2-dioxopentyl)-2-(4-thiazolidine) carboxylate;

or a pharmaceutically acceptable salt, ester, or solvate thereof.

29. (Currently amended) The pharmaceutical composition of claim 17, wherein the first compound is of formula III



III

or a pharmaceutically acceptable salt, ester, or solvate thereof, wherein:

A, B, C and D are independently CH<sub>2</sub>, O, S, SO, SO<sub>2</sub>, NH, or NR<sub>1</sub>, provided that A, B, C and D are not all CH<sub>2</sub>;

R<sub>1</sub> is C<sub>1</sub>-C<sub>5</sub> straight or branched chain alkyl or C<sub>2</sub>-C<sub>5</sub> straight or branched chain alkenyl, which is substituted with one or more substituent(s) independently selected from the group consisting of (Ar<sub>1</sub>)<sub>n</sub> and C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or C<sub>2</sub>-C<sub>6</sub> straight or branched chain alkenyl substituted with (Ar<sub>1</sub>)<sub>n</sub>;

n is 1 or 2;

R<sub>2</sub> is either C<sub>1</sub>-C<sub>9</sub> straight or branched chain alkyl, C<sub>2</sub>-C<sub>9</sub> straight or branched chain alkenyl, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, C<sub>5</sub>-C<sub>7</sub> cycloalkenyl, or Ar<sub>1</sub>; and

Ar<sub>1</sub> is an alicyclic or aromatic, mono-, bi- or tricyclic, carbo- or heterocyclic ring, wherein the ring is either unsubstituted or substituted with one or more substituent(s) independently selected from the group consisting of halo, hydroxy, nitro, trifluoromethyl, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl, C<sub>2</sub>-C<sub>6</sub> straight or branched chain alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>2</sub>-C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, and amino, wherein the individual ring size is 5-6 members, and wherein the heterocyclic ring has 1-6 heteroatom(s) independently selected from the group consisting of O, N, and S.

30. (Original) The pharmaceutical composition of claim 29, wherein:

A is CH<sub>2</sub>;

B is CH<sub>2</sub>;

C is S, O or NH;

D is CH<sub>2</sub>;

R<sub>1</sub> is selected from the group consisting of 3-phenylpropyl and (3, 4, 5-trimethoxy) phenylpropyl; and

R<sub>2</sub> is selected from the group consisting of 1,1-dimethylpropyl, cyclohexyl, *tert*-butyl, phenyl, and 3, 4, 5-trimethoxyphenyl.

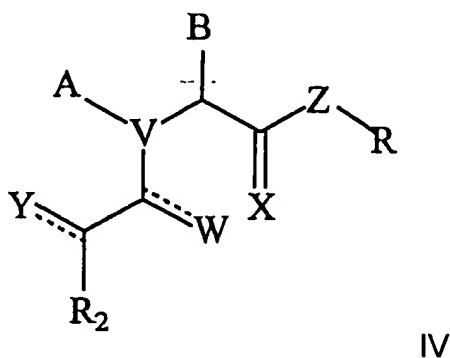
31. (Original) The compound of claim 30, wherein:

C is NH; and

R<sub>2</sub> is 1,1-dimethylpropyl or phenyl.

32. (Currently Amended) A pharmaceutical composition which comprises:

(i) a compound of formula IV



or a pharmaceutically acceptable salt, ester, or solvate thereof, wherein:

V is CH or N;

A and B, taken together with V and the carbon atom to which they are respectively attached, form a 5-7 membered saturated or unsaturated heterocyclic ring containing, in addition to V, one or more heteroatom(s) independently selected from the group consisting of O, S, SO, SO<sub>2</sub>, N, NH, and NR;

R is either C<sub>1</sub>-C<sub>9</sub> straight or branched chain alkyl, C<sub>2</sub>-C<sub>9</sub> straight or branched chain alkenyl, C<sub>3</sub>-C<sub>9</sub> ~~cycloalkyl~~ cycloalkyl, C<sub>5</sub>-C<sub>7</sub> cycloalkenyl, or Ar<sub>3</sub>,

wherein R is either unsubstituted or substituted with one or more substituent(s) independently selected from the group consisting of halo, haloalkyl, carbonyl, carboxy, hydroxy, nitro, trifluoromethyl, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl, C<sub>2</sub>-C<sub>6</sub> straight or branched chain alkenyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, C<sub>2</sub>-C<sub>4</sub> alkenyloxy, phenoxy, benzyloxy, thioalkyl, alkylthio, sulfhydryl, amino, alkylamino, aminoalkyl, aminocarboxyl, and Ar<sub>4</sub>

Ar<sub>3</sub> and Ar<sub>4</sub> are independently an alicyclic or aromatic, mono-, bi- or tricyclic, carbo- or heterocyclic ring;

wherein the individual ring size is 5-8 members, wherein said heterocyclic ring has 1-6 heteroatom(s) independently selected from the group consisting of O, N, and S;

X is O or S;

Z is O, NH, or NR<sub>1</sub>;

W and Y are independently O, S, CH<sub>2</sub>, or H<sub>2</sub>;

R<sub>1</sub> is C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or C<sub>2</sub>-C<sub>6</sub> straight or branched chain alkenyl, which is substituted with one or more substituent(s) independently selected from the group consisting of (Ar<sub>1</sub>)<sub>n</sub>, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or C<sub>2</sub>-C<sub>6</sub> straight or branched chain alkenyl substituted with (Ar<sub>1</sub>)<sub>n</sub>, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, C<sub>1</sub>-C<sub>6</sub> straight or branched chain alkyl or C<sub>2</sub>-C<sub>6</sub> straight or branched chain alkenyl substituted with C<sub>3</sub>-C<sub>8</sub> cycloalkyl, and Ar<sub>2</sub>;

n is 1 or 2; and



R<sub>2</sub> is either C<sub>1</sub>-C<sub>9</sub> straight or branched chain alkyl, C<sub>2</sub>-C<sub>9</sub> straight or branched chain alkenyl, C<sub>3</sub>-C<sub>8</sub> cycloalkyl, C<sub>5</sub>-C<sub>7</sub> cycloalkenyl or Ar<sub>1</sub>,

wherein said alkyl, alkenyl, cycloalkyl or cycloalkenyl is either unsubstituted or substituted with one or more substituent(s) independently selected from the group consisting of C<sub>1</sub>-C<sub>4</sub> straight or branched chain alkyl, C<sub>2</sub>-C<sub>4</sub> straight or branched chain alkenyl, and hydroxy;

- (ii) a second compound for treating alopecia or promoting hair growth; and
- (iii) a pharmaceutically acceptable carrier.

33. (Canceled).